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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,783	06/27/2003	Mike G. MacGregor	884.940US1	6466
21186	7590	05/01/2006	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			BROUSSARD, COREY M	
			ART UNIT	PAPER NUMBER
			2835	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/607,783

Applicant(s)

MACGREGOR, MIKE G.

Examiner

Corey M. Broussard

Art Unit

2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-26 and 33-40 is/are allowed.
- 6) ☒ Claim(s) 27-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (PN 6,046,905) in view of Johnson et al (PN 4,321,423). With respect to claim 27, Nelson teaches a heat sink (24, 30) that includes an opening extending through the heat sink; a motherboard (14); an electronic device (18) between the motherboard and the heat sink; a pin (26) that extends through the opening in the heat sink (see Fig. 2); and a member (45) within the opening in the heat sink, the member being between the heat sink and the pin (col 3, 14-16). Nelson lacks specific teaching of wherein the pin is soldered to the motherboard to couple the heat sink to the electronic device and the motherboard. Johnson teaches wave soldering the pin (9, 10) to the motherboard (8, col 3 lines 50-62). It would have been obvious to use the wave soldering technique taught by Johnson to connect the pins to the motherboard instead of the spring clip of Nelson for the benefit of strong mechanical connection between the pin and the motherboard.

Art Unit: 2835

3. With respect to claim 28, Nelson teaches wherein the member (45) is a bushing that is pressed into the opening in the heat sink (24, 30) and the pin (26) is pressed through an opening in the bushing (col 3, 14-16, see Fig. 2).
4. With respect to claim 29, Nelson teaches wherein the heat sink (24, 30) includes an upper surface and a lower surface such that the opening (openings in 24 for 26, see Fig. 2) extends between the upper and lower surfaces of the heat sink, the pin (26) engaging the upper surface of the heat sink and the electronic device (18) engaging the lower surface of the heat sink (the pins and electronic device inherently engage all surfaces of the heat sink, see Fig. 2).
5. With respect to claim 30, Nelson teaches wherein the pin (26) includes a head (44) that is larger than the opening in the heat sink (see Fig. 2, col 3 lines 15-16, 34-35), the head of the pin engaging the upper surface of the heat sink (the head of the pin engages the heat sink and therefore must inherently engage all surfaces of the heat sink).
6. With respect to claim 31, Nelson teaches wherein the pin (26) includes a body that is cylindrical, and the opening in the heat sink (24, 30) is cylindrical (see Fig. 2, 3).
7. With respect to claim 32, Nelson teaches a thermally conductive material (40) between the heat sink and the electronic device (18, see Fig. 2, col 3, 38-40).

### ***Response to Arguments***

8. Applicant's arguments filed December 27, 2005 with respect to presently rejected claims 27-32 have been fully considered but they are not persuasive. The motivation to

Art Unit: 2835

make the combination suggested is explicit in Hsieh (PN 6,822,867). Hsieh teaches the failings of the spring clip method (col 1, 48-65, Fig. 1) and the improvement of soldering the pins directly to the motherboard (col 3, 1-12, Fig. 11, 12). Hsieh establishes the fact that it was known before the invention by applicant to replace spring clip with solder connections. Therefore the rejection is maintained.

***Allowable Subject Matter***

9. Claims 21-26, 33-40 allowed.

10. The following is a statement of reasons for the indication of allowable subject matter: The allowability resides in the overall structure of the device as recited in independent apparatus claims 21 and 38 and at least in part, because claims 21 and 38 recite: "...a pin that contacts the upper surface of the heat sink, ... and a member within the opening in the heat sink, the member being between the heat sink and the pin, the member including an upper surface that is substantially planer with the upper surface of the heat sink and a lower surface that is substantially planer with the lower surface of the heat sink.".

The aforementioned limitations in combination with all remaining limitations of claims 21 and 38 respectively are believed to render said claims 21 and 38 and all claims currently dependent therefrom patentable over the art of record.

The closest reference to the present invention is believed to be Davison (US Pub 2004/0130876).

Davison teaches wherein a member between the pin and the heat sink is planer with the upper and lower surfaces of said heat sink, but did not disclose "...a pin that contacts the upper surface of the heat sink, ... and a member within the opening in the heat sink, the member being between the heat sink and the pin, the member including an upper surface that is substantially planer with the upper surface of the heat sink and a lower surface that is substantially planer with the lower surface of the heat sink."

11. The allowability resides in the overall structure of the device as recited in independent apparatus claim 33 and at least in part, because claim 33 recites: "...positioning the member within an opening in the heat sink such that a lower surface of the member is substantially planer with the lower surface of the heat sink and an upper surface of the member is substantially planer with the upper surface of the heat sink; ... the pin contacts the upper surface of the heat sink and the member is between the pin and the heat sink;..."

The aforementioned limitations in combination with all remaining limitations of claim 33 are believed to render said claim 33 and all claims currently dependent therefrom patentable over the art of record.

The closest reference to the present invention is believed to be Davison (US Pub 2004/0130876).

Davison teaches wherein a member between the pin and the heat sink is planer with the upper and lower surfaces of said heat sink, but did not disclose "...positioning the member within an opening in the heat sink such that a lower surface of the member is substantially planer with the lower surface of the heat sink and an upper surface of

the member is substantially planer with the upper surface of the heat sink; ... the pin contacts the upper surface of the heat sink and the member is between the pin and the heat sink;...”.

12. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Davison (US Pub 2004/0130876) teaching a member planer with upper and lower surfaces of the heatsink. Hsieh (PN 6,822,867) teaching soldering connecting pins to a substrate for cooling a component. Su (PN 6,317,328) teaching a pin that contacts an upper surface of a heatsink with a member in-between, but the member lacks an upper or lower surface planer with upper and lower surfaces of the heat sink.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 2835

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey M. Broussard whose telephone number is 571 272 2799. The examiner can normally be reached on 7:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on 571 272 2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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cmb

*Lisa Lea-Edmonds*  
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**PRIMARY EXAMINER**